Chapter 9: Temporary Shoring

9.1 Introduction

NCDOT established a policy that determined when the contractor would and would not be paid for the installation of temporary shoring. This policy states that any time shoring is necessary to maintain traffic, it will be paid for. Shoring not necessary for the maintenance of traffic will not be paid for but will be considered incidental to the operation for which the shoring is needed.

9.2 Definitions & Abbreviations

Temporary Shoring – That sheeting, shoring, and bracing required to laterally support the sides of an excavation or embankment to prevent slope failure. This typically consists of sheet piling of some kind.

Shoring for the Maintenance of Traffic – That shoring necessary to provide lateral support to the side of an excavation or embankment parallel to an open travelway when a theoretical 2:1 or steeper slope from the bottom of the excavation or embankment intersects the existing ground line closer than five (5) feet from the edge of pavement of the open travelway.

Temporary Shoring - Barrier Supported – Shoring used when portable concrete barrier (PCB) is located within three (3) feet of the shoring, measured to the back face of the PCB, and a drop-off of at least three (3) feet exists behind the shoring, requiring the shoring to be designed to resist lateral movement of the PCB – when struck by a vehicle.

9.3 Shoring Guidelines

A. Identify the need (or potential need) for Shoring for the Maintenance of Traffic and determine approximate locations, based on the following details:

1. Cross sections from the Roadway Plans can be used to show the relationship between existing and proposed alignments. This will help identify the distance between structures and grade differences between alignments.
2. Structure Design's preliminary drawings should include dimensions and depths of the footings, end bents, bents (of structures over traffic), and culverts; type of footing and end bents; distance between proposed and existing structures (if applicable). Typically, five (5) feet minimum of working area is required between bridges.
3. From the lowest elevation that will be excavated, provide one to two (1-2) feet minimum for construction room and then use a 2:1 slope to determine if the excavation

will encroach on the existing travel lanes. If the toe of the slope is within five (5) feet of the existing travel lane, then temporary shoring is needed. This is true for both structure and roadway work.

B. Discuss the need for shoring at the first field inspection. Make sure that the need for temporary shoring is documented in the Traffic Control-field inspection minutes and the field inspection notes from the Division.

C. If deemed necessary, schedule and conduct a Temporary Shoring for the Maintenance of Traffic meeting.

1. Invite Roadway Design, Structure Design, and Geotechnical to the Shoring meeting.
2. During the meeting, show Traffic Control's findings from the preliminary check for shoring and explain why it may be needed.
3. Ask Structure Design if they are going to require shoring around the end bents, internal bents, between structures, or around footings.
4. Complete and distribute shoring meeting minutes. Include in the minutes what was discussed and who will supply what information and when.
5. Give approximate locations of proposed temporary shoring to the Geotechnical Engineering Unit. They will verify the locations and provide Traffic Control with a letter, which includes the finalized shoring locations, soil parameters, offsets, and a shoring quantity.

D. Using the information received from the Geotechnical Engineering Unit, show the following on the Traffic Control Plan:

- Show using appropriate line style at each location that requires temporary shoring.
- Label the beginning and ending stations and offsets at each location of shoring.
- Show soil parameters at each shoring location on appropriate CADD sheet created for same, "Temporary Shoring Notes."

9.4 Design Issues

Before committing to using temporary shoring, investigate ways that can eliminate the need for the shoring, including, but not limited to:

Consider using a 1.5:1 temporary slope instead of a 2:1 slope. Sometimes using a 1.5:1 slope will move the toe of the fill/cut far enough away to eliminate the need for shoring. Use of a 1.5:1 slope **must be coordinated with the Geotechnical Engineering Unit.**

Consider using a soil fabric wall instead of conventional shoring. Geotechnical will make the final call on whether a soil fabric wall can be used, so make sure to coordinate with them.

See the PCB at Temporary Shoring Location Details for required barrier offset distances when using soil fabric walls. Any shoring necessary to build part of the project (e.g. end bents, bents, retaining walls, etc.) but is not necessary to maintain traffic, **does not get paid for as shoring and is not the responsibility of Traffic Control.**

9.5 Design Criteria

Temporary Shoring for the Maintenance of Traffic is required when the toe of a 2:1 or steeper slope from an excavation or fill necessary for construction comes **closer than five (5) feet** to the edge of an existing travel lane.

Temporary Shoring - Barrier supported is required when **both** of the following occur:

1. Portable concrete barrier (PCB) is **within three (3) feet** of the top of the shoring, measured from the shoring to the back of the PCB, and;

2. There is a **three (3) foot or greater** drop-off behind the shoring

9.6 Design Resources

The following are good resources for dealing with temporary shoring:

- Temporary Shoring Tutorial
- Traffic Control Project Engineers and Project Design Engineers
- Geotechnical Engineering Unit